

Course: Nutritional Biochemistry and Physiology

1. **Type** : Specialization's Elective
2. **Code** : PTN 6104
3. **Credit** : 2/0
4. **Semester** : Odd
5. **Description** :

The life of animal is determined by the physiology of digestion activities, absorption, and metabolism of biological compounds in cells. Just like carbohydrates, proteins, lipids and nucleic acids, in which, the process is carried out enzymatically. To understand the biological process in every animal science study, we need to observe the logical life studies that are always related to physiological and biochemistry activities. Based on the above things, animal science students need to understand the formulation of feed and water intake, especially for ruminants and non-ruminant animals, physiology of digestion (poultry, ruminants and non-ruminants), dynamics of digestion and absorption of nutrients. Furthermore, there will be a discussion for metabolism of carbohydrates, proteins, lipids and nucleic acids on ruminants and non-ruminants, and their interaction during energy production process. The discussion will also talk about structures and kinetics of enzyme, abnormalities and metabolism setting, physiological system that includes hormonal, immune system and nerves, as well as the detoxification process.

6. Course Outcomes (CO)

- CO 1 : Students understand and are capable in explaining physiological and biochemical functions of livestock digestive organs as well as its influencing factors.
- CO 2 : Students understand and are capable in explaining biochemical and physiological activities of ruminal microbes.
- CO 3 : Student understand and are capable to explain metabolism process of biological compounds and its connection one to another, as well as it rules.
- CO 4 : Students understand and are capable to explain the link between intra and extra cellular of cell metabolites in various organs and their effects on anima production and reproductive performance.

7. The Alignment Between CO and ELO

CO*	ELO**																
	A				B			C				D					
	1	2	3	4	1	2	3	1	2	3	4	1	2	3	4	5	6
CO 1				✓	✓	✓											
CO 2				✓				✓			✓			✓			

6	Able to communicate spoken and written English effectively by using the information technology for the development of animal science and its implementation.
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8. Course Content

Week	CO	Topic/Subtopic	Learning Activity	Assessment Tools	Allocated Time	Lecturer
1	CO 1	Physiological aspects of poultry and non-ruminant digestive system	Classical lecture and discussion	Midterm	2	
2	CO 1	Nutrient intake dynamics on poultry and non-ruminant	Classical lecture and discussion	Midterm	2	
3	CO 1	Nutrient absorption dynamics on poultry	Classical lecture and discussion	Midterm	2	
4	CO 1	Physiology and development of digestive system on ruminant	Classical lecture and discussion	Midterm	2	
5	CO 1	Intake-nutrient dynamic on ruminant	Classical lecture and discussion	Midterm	2	
6	CO 1	Calf nutrient and factor affecting rumen development	Classical lecture and discussion	Midterm	2	
7	CO 1	Feed-particle size and its effects on feed intake, ruminal fermentation, and ruminal papillae development	Classical lecture and discussion	Midterm	2	
Midterm Examination						
8	CO 1	Forage and its effects on ruminal microbes development	Classical lecture and discussion	Final exam	2	

9	CO 2	Ruminal microbes physiology	Classical lecture and discussion	Final exam	2	
10	CO 2	Metabolism of ruminal microbes	Classical lecture and discussion	Final exam	2	
11	CO 3	Metabolism on various organs	Classical lecture and discussion	Final exam	2	
12	CO 3	Nutrient and hormone and its roles on digestive and metabolism regulation	Classical lecture and discussion	Final exam	2	
13	CO 4	Nutrient and immunity	Classical lecture and discussion	Final exam	2	
14	CO 4	Metabolic adaptation and hormonal system during reproductive cycle	Classical lecture and discussion	Final exam	2	
Final Examination						

9. Assessment

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Class participating	CO 1; CO 2; CO 3 CO 4	10	
Discussion	CO 1; CO 2; CO 3; CO 4	10	
Midterm	CO 1	35	
Final exam	CO 2; CO 3; CO 4	35	
Total		100	

10. Lecturer

1. Team

11. Reference

06 December 2018